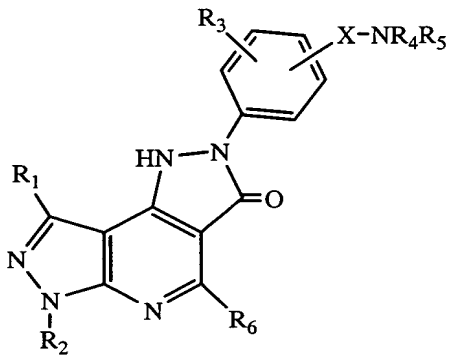
What is claimed is:

1. A compound of formula I



(I)

wherein

X is CO or SO_2;

R_1 and R_2 are each independently H, C_1-C_{10}alkyl optionally substituted with one or more halogen, hydroxy, C_1-C_4alkoxy, CO_2R_8, $CONR_9R_{10}$, C_3-C_7cycloalkyl or optionally substituted phenyl groups, or

phenyl optionally substituted with one to three halogen, hydroxy, C_1-C_6haloalkyl, C_1-C_4alkoxy, CO_2R_{11}, $NR_{12}R_{13}$ or CN groups;

R_3 is H, F, Cl, Br or I;

R_4 and R_5 are each independently H, NH_2, $CH_2CH_2OCH_2CH_2OCH_2CH_2NH_2$ or a C_1-C_6alkyl group optionally substituted with one or two CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17} or C_3-C_7cycloalkyl group,

phenyl optionally substituted with one or two halogen, CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17}, COR_{18}, an optionally substituted C_1-C_6alkyl or an optionally substituted C_2-C_6alkenyl group,

benzyl optionally substituted with one or two halogen, OR_{14}, COR_{18}, or a C_1-C_3alkyl group optionally substituted with one OR_{14} group, or

pyridinyl optionally substituted with one or two halogen, OR_{14}, $NR_{15}R_{16}$ or CO_2R_{17} groups, or

R_4 and R_5 may be taken together with the atom to which they are attached to form an optionally substituted 5- to 7-membered ring optionally

containing one double bond, a benzofused ring or an additional heteroatom selected from O, NR_{19} or S;

R_6 is phenyl optionally substituted with one to three halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups,

cycloheteroalkyl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, SO_2NR_{21},R_{22}, CO_2R_{23} or $NR_{24}R_{25}$ groups, or

heteroaryl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups;

R_8, R_{11}, R_{17}, R_{18} and R_{23} are each independently H or a C_1-C_6alkyl, C_3-C_7 cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted;

R_9, R_{10}, R_{12}, R_{13}, R_{15}, R_{16}, R_{21}, R_{22}, R_{24} and R_{25} are each independently H or a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted or each of R_9 and R_{10} or R_{12} and R_{13} or R_{15} and R_{16} or R_{21} and R_{22} or R_{24} and R_{25} may be taken together with the nitrogen atom to which they are attached to form a 5- to 7-membered ring optionally containing another heteroatom selected from O, N or S;

n is 0 or an integer of 1 or 2;

R_{14} is H, C_1-C_3alkyl or C_1-C_3haloalkyl;

R_{19} is H or C_1-C_3alkyl; and

R_{20} is a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted; or

the stereoisomers thereof or the pharmaceutically acceptable salts thereof.

2. The compound according to claim 1 wherein X is CO.

3. The compound according to claim 1 wherein R_1 is H.

4. The compound according to claim 1 wherein R_1 is H.The compound according to claim 1 wherein R_6 is a phenyl group optionally substituted with one or two CN, NO_2, halogen, CF_3, C_1-C_3alkoxy or CO_2R_{23} groups.

5. The compound according to claim 2 wherein R_2 is H or C_1-C_3alkyl.

6. The compound according to claim 2 wherein R_4 and R_5 are each independently H or a C_1-C_3alkyl, phenyl or benzyl group each optionally substituted with one or two hydroxy groups or R_4 and R_5 may be taken together with the atom to which they are attached to form a pyrrolidinyl or morpholinyl ring each optionally substituted with one carboxy group.

7. The compound according to claim 5 wherein R_6 is phenyl optionally substituted in the 3-position with CF_3.

8. The compound according to claim 7 wherein R_1 is H.

9. The compound according to claim 7 wherein R_1 is H.The compound according to claim 1 selected from the group consisting of:

N-(4-hydroxyphenyl)-3-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

N-(2,2-dimethoxyethyl)-*N*-methyl-3-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

6-methyl-2-[3-(1-pyrrolidinylcarbonyl)phenyl]-4-[3-(trifluoromethyl)phenyl]-1,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-3(2H)-one;

(2R)-1-[3-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzoyl]-2-pyrrolidinecarboxylic acid;

N-(3,4-dihydroxybenzyl)-3-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

N-(2-hydroxypropyl)-3-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

1-{2-chloro-5-[6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3',4'-d]pyridin-2(1H)-yl]benzoyl}-D-proline;

2-(4-chloro-3-{[(2R)-2-(hydroxymethyl)pyrrolidin-1-yl]carbonyl}phenyl)-6-methyl-4-[3-(trifluoromethyl)phenyl]-1,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-3(2H)-one;

N-(4-hydroxyphenyl-4-{6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3',4'-d]pyridin-2(1H)-yl}benzamide;

N-(2-hydroxyphenyl)-4-{6-methyl-3-oxo-3-[3-(trfluoromethyl)phenyl]- 3,6-dihydrodipyrazolo[3,4-b:3',4'-d]pyridin-2(1H)-yl}benzamide;

6-methyl-2-[4-(4-morpholinylcarbonyl)phenyl]-4-[3-(trifluoromethyl)phenyl]-1,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-3(2H)-one;

N-[4-(2-hydroxyethyl)phenyl]-4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

N-[3-(1-hydroxyethyl)phenyl]-4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

N-[3-(hydroxymethyl)phenyl]-4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzamide;

N-(5-hydroxypentyl)-4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzenesulfonamide;

N-benzyl-4-[6-methyl-3-oxo-4-(3-trifluoromethyl-phenyl)-3,6-dihydro-1H-1,2,5,6,7-pentaaza-as-indacen-2-yl]-benzenesulfonamide;

N-(2-hydroxyethyl)-4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)benzenesulfonamide;

methyl ({[4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)phenyl]sulfonyl}amino)acetate;

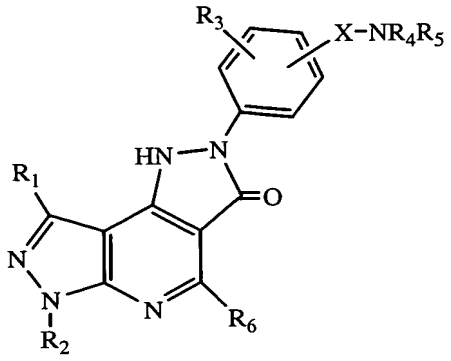
N-cyclopropylmethyl-4-[6-methyl-3-oxo-4-(3-trifluoromethyl-phenyl)-3,6-dihydro-1H-1,2,5,6,7-pentaaza-as-indacen-2-yl]-benzenesulfonamide;

({[4-(6-methyl-3-oxo-4-[3-(trifluoromethyl)phenyl]-3,6-dihydrodipyrazolo[3,4-b:3,4-d]pyridin-2(1H)-yl)phenyl]sulfonyl}amino)acetic acid;

the stereoisomers thereof; and

the pharmaceutically acceptable salts thereof.

10. A method for the treatment of an immune disorder related to or affected by the immune regulatory protein B7-1 which comprises providing a patient in need thereof an immunotherapeutically effective amount of a compound of formula I



(I)

wherein

X is CO or SO_2;

R_1 and R_2 are each independently H, C_1-C_{10}alkyl optionally substituted with one or more halogen, hydroxy, C_1-C_4alkoxy, CO_2R_8, $CONR_9R_{10}$, C_3-C_7cycloalkyl or optionally substituted phenyl groups, or

phenyl optionally substituted with one to three halogen, hydroxy, C_1-C_6haloalkyl, C_1-C_4alkoxy, CO_2R_{11}, $NR_{12}R_{13}$ or CN groups;

R_3 is H, F, Cl, Br or I;

R_4 and R_5 are each independently H, NH_2, $CH_2CH_2OCH_2CH_2OCH_2CH_2NH_2$ or a C_1-C_6alkyl group optionally substituted with one or two CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17} or C_3-C_7cycloalkyl group,

phenyl optionally substituted with one or two halogen, CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17}, COR_{18}, an optionally substituted C_1-C_6alkyl or an optionally substituted C_2-C_6alkenyl group,

benzyl optionally substituted with one or two halogen, OR_{14}, COR_{18}, or a C_1-C_3alkyl group optionally substituted with one OR_{14} group, or

pyridinyl optionally substituted with one or two halogen, OR_{14}, $NR_{15}R_{16}$ or CO_2R_{17} groups, or

R_4 and R_5 may be taken together with the atom to which they are attached to form an optionally substituted 5- to 7-membered ring optionally containing one double bond, a benzofused ring or an additional heteroatom selected from O, NR_{19} or S;

R_6 is phenyl optionally substituted with one to three halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups,

cycloheteroalkyl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, SO_2NR_{21},R_{22}, CO_2R_{23} or $NR_{24}R_{25}$ groups, or

heteroaryl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups;

R_8, R_{11}, R_{17}, R_{18} and R_{23} are each independently H or a C_1-C_6alkyl, C_3-C_7 cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted;

R_9, R_{10}, R_{12}, R_{13}, R_{15}, R_{16}, R_{21}, R_{22}, R_{24} and R_{25} are each independently H or a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted or each of R_9 and R_{10} or R_{12} and R_{13} or R_{15} and R_{16} or R_{21} and R_{22} or R_{24} and R_{25} may be taken together with the nitrogen atom to which they are attached to form a 5- to 7-membered ring optionally containing another heteroatom selected from O, N or S;

n is 0 or an integer of 1 or 2;

R_{14} is H, C_1-C_3alkyl or C_1-C_3haloalkyl;

R_{19} is H or C_1-C_3alkyl; and

R_{20} is a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted; or

the stereoisomers thereof or the pharmaceutically acceptable salts thereof.

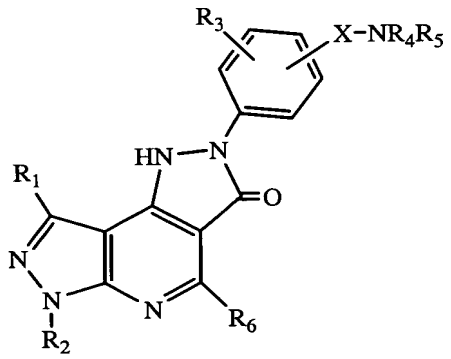
11. The method according to claim 10 wherein said disorder is transplant rejection.

12. The method according to claim 10 wherein said disorder is an autoimmune disease.

13. The method according to claim 10 wherein said disorder is graft vs. host disease.

14. The method according to claim 12 wherein said disease is multiple sclerosis or rheumatoid arthritis.

15. A pharmaceutical composition which comprises a pharmaceutically acceptable carrier and an effective amount of a compound of formula I



(I)

wherein

X is CO or SO_2;

R_1 and R_2 are each independently H, C_1-C_{10}alkyl optionally substituted with one or more halogen, hydroxy, C_1-C_4alkoxy, CO_2R_8, $CONR_9R_{10}$, C_3-C_7cycloalkyl or optionally substituted phenyl groups, or phenyl optionally substituted with one to three halogen, hydroxy, C_1-C_6haloalkyl, C_1-C_4alkoxy, CO_2R_{11}, $NR_{12}R_{13}$ or CN groups;

R_3 is H, F, Cl, Br or I;

R_4 and R_5 are each independently H, NH_2, $CH_2CH_2OCH_2CH_2OCH_2CH_2NH_2$ or a C_1-C_6alkyl group optionally substituted with one or two CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17} or C_3-C_7cycloalkyl group,

phenyl optionally substituted with one or two halogen, CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17}, COR_{18}, an optionally substituted C_1-C_6alkyl or an optionally substituted C_2-C_6alkenyl group,

benzyl optionally substituted with one or two halogen, OR_{14}, COR_{18}, or a C_1-C_3alkyl group optionally substituted with one OR_{14} group, or

pyridinyl optionally substituted with one or two halogen, OR_{14}, $NR_{15}R_{16}$ or CO_2R_{17} groups, or

R_4 and R_5 may be taken together with the atom to which they are attached to form an optionally substituted 5- to 7-membered ring optionally containing one double bond, a benzofused ring or an additional heteroatom selected from O, NR_{19} or S;

R_6 is phenyl optionally substituted with one to three halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups,

cycloheteroalkyl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, SO_2NR_{21},R_{22}, CO_2R_{23} or $NR_{24}R_{25}$ groups, or

heteroaryl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups;

R_8, R_{11}, R_{17}, R_{18} and R_{23} are each independently H or a C_1-C_6alkyl, C_3-C_7 cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted;

R_9, R_{10}, R_{12}, R_{13}, R_{15}, R_{16}, R_{21}, R_{22}, R_{24} and R_{25} are each independently H or a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted or each of R_9 and R_{10} or R_{12} and R_{13} or R_{15} and R_{16} or R_{21} and R_{22} or R_{24} and R_{25} may be taken together with the nitrogen atom to which they are attached to form a 5- to 7-membered ring optionally containing another heteroatom selected from O, N or S;

n is 0 or an integer of 1 or 2;

R_{14} is H, C_1-C_3alkyl or C_1-C_3haloalkyl;

R_{19} is H or C_1-C_3alkyl; and

R_{20} is a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cyclo-heteroalkyl or heteroaryl group each optionally substituted; or

the stereoisomers thereof or the pharmaceutically acceptable salts thereof.

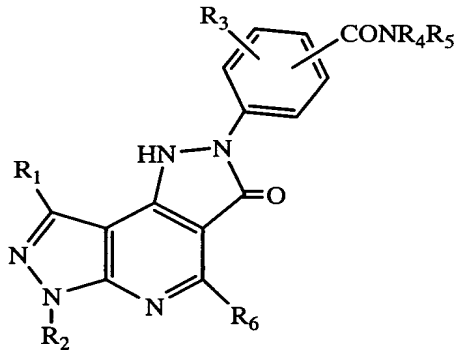
16. The composition according to claim 15 having a formula I compound wherein X is CO.

17. The composition according to claim 16 having a formula I compound wherein R_1 is H.

18. The composition according to claim 17 having a formula I compound wherein R_2 is H or CH_3.

19. The composition according to claim 18 having a formula I compound wherein R_6 is phenyl optionally substituted in the 3-position with CF_3.

20. A process for the preparation of a compound of formula Ia



(Ia)

wherein

R_1 and R_2 are each independently H, C_1-C_{10}alkyl optionally substituted with one or more halogen, hydroxy, C_1-C_4alkoxy, CO_2R_8, $CONR_9R_{10}$, C_3-C_7cycloalkyl or optionally substituted phenyl groups, or

phenyl optionally substituted with one to three halogen, hydroxy, C_1-C_6haloalkyl, C_1-C_4alkoxy, CO_2R_{11}, $NR_{12}R_{13}$ or CN groups;

R_3 is H, F, Cl, Br or I;

R_4 and R_5 are each independently H, NH_2, $CH_2CH_2OCH_2CH_2OCH_2CH_2NH_2$ or a

C_1-C_6alkyl group optionally substituted with one or two

CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17} or C_3-C_7cycloalkyl group,

phenyl optionally substituted with one or two halogen, CN, OR_{14}, $NR_{15}R_{16}$, CO_2R_{17}, COR_{18}, an optionally substituted C_1-C_6alkyl or an optionally substituted C_2-C_6alkenyl group,

benzyl optionally substituted with one or two halogen, OR_{14}, COR_{18}, or a

C_1-C_3alkyl group optionally substituted with one OR_{14} group, or

pyridinyl optionally substituted with one or two halogen, OR_{14}, $NR_{15}R_{16}$ or CO_2R_{17} groups, or

R_4 and R_5 may be taken together with the atom to which they are attached to form an optionally substituted 5- to 7-membered ring optionally

containing one double bond, a benzofused ring or an additional heteroatom selected from O, NR_{19} or S;

R_6 is phenyl optionally substituted with one to three halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or

$NR_{24}R_{25}$ groups,

cycloheteroalkyl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, SO_2NR_{21},R_{22}, CO_2R_{23} or $NR_{24}R_{25}$ groups, or

heteroaryl optionally substituted with one or more halogen, NO_2, CN, hydroxy, C_1-C_6alkyl, C_1-C_6alkylthio, C_1-C_6haloalkyl, C_1-C_6alkoxy, phenyl, phenoxy, benzyl, benzyloxy, SO_nR_{20}, $SO_2NR_{21}R_{22}$, CO_2R_{23} or $NR_{24}R_{25}$ groups;

R_8, R_{11}, R_{17}, R_{18} and R_{23} are each independently H or a C_1-C_6alkyl, C_3-C_7 cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted;

R_9, R_{10}, R_{12}, R_{13}, R_{15}, R_{16}, R_{21}, R_{22}, R_{24} and R_{25} are each independently H or a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted or each of R_9 and R_{10} or R_{12} and R_{13} or R_{15} and R_{16} or R_{21} and R_{22} or R_{24} and R_{25} may be taken together with the nitrogen atom to which they are attached to form a 5- to 7-membered ring optionally containing another heteroatom selected from O, N or S;

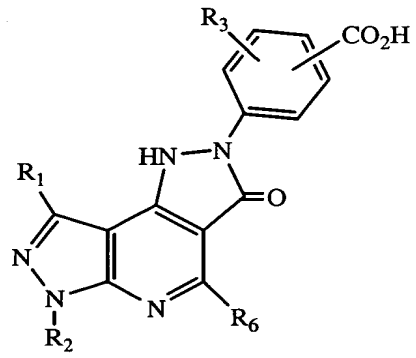
n is 0 or an integer of 1 or 2;

R_{14} is H, C_1-C_3alkyl or C_1-C_3haloalkyl;

R_{19} is H or C_1-C_3alkyl; and

R_{20} is a C_1-C_6alkyl, C_3-C_7cycloalkyl, C_1-C_6haloalkyl, phenyl, C_5-C_7cycloheteroalkyl or heteroaryl group each optionally substituted

which process comprises reacting a compound of formula II



(II)

wherein R_1, R_2, R_3 and R_6 are defined hereinabove with an amine, HNR_4R_5, in the presence of an activating agent and a solvent.